BUROHAPPOLD ENGINEERING

Northumberland Development Project

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Glossary

Term	Definition

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1 Introduction

This Sustainability Strategy has been developed to support the planning application for the Project in Tottenham, North-East London. This statement describes the objectives and deliverables for the construction and operation of the project in order to communicate the measures implemented to ensure sustainable development.

Sustainable development in this context comprises of four main issues: environmental impact, social and community impact, economic and commercial impact, and the depletion of natural resources.

1.1 Site Description

The development of the scheme will see the regeneration of the existing Tottenham Hotspurs FC grounds within Tottenham. At present, the Project site is occupied by the existing football stadium, car parking areas, industrial units, and residential properties. The site area and the illustrative proposal can be seen in Figure 1-1 and comprises of:

- **Stadium (D)** - 61,000 seat capacity with suitability for 55,000 capacity music concert use
- **Hotel (D)** - 180 bed hotel with 49 residential flats
- **THFC Experience (D)** - Museum, retail, cinema and outdoor community spaces
- **Residential Towers (O)** - 585 dwellings and business / community uses at plinth level
- **Extreme Sports (O)** - Indoor diving and climbing facility
- **North-East Building (O)** - Community health centre

Figure 1-1 Illustrative image of the Project

The application is a hybrid application seeking part outline and part detailed planning permission (indicated above O=Outline, D= Detailed). The varying levels of detail submitted for approval are referenced throughout the document, as this has an impact on the level of detail and analysis present in this document.

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1.2 Aims and vision

The Club is committed to playing a key role in the wider regeneration of the local area and the Northumberland Development Project has provided much strength to the development of the 20 year regeneration programme for Tottenham as led by Haringey Council. This programme sets out seven priorities for the area, based directly from feedback of the local community and businesses over the last few years. These are as listed below, with comments on how the NDP have contributed towards these aims:

Haringey Council Priority Areas	NDP contribution
World-class education and training	Phase 1 of the NDP is completed, with Lilywhite House now fully operational. This includes the Sainsbury's supermarket, on top of which is the new Tottenham University Technical College (TUTC) which has been accepting students since September 2014. TUTC was founded by the Club and Middlesex University and THFC was instrumental in bringing the university to Tottenham, in order to create further education and training opportunities for young people across North London
Improved access to jobs and business opportunities	In the first phase of the NDP, over 400 new jobs and 100 new apprenticeships were created onsite and around the Borough. This figure is expected to increase significantly with the Stadium and Southern Development. Local businesses will benefit from the increased capacity of the stadium, and through the investment that the new hotel, residential blocks, THFC experience and extreme sports building will bring.
A different kind of housing market	The residential towers will cater towards demands at a range of prices and tenures, with the creation of 585 new homes, a portion of which will be affordable housing.
A fully connected community with even better transport links	The promotion of NDP as a Public Transport Destination has encouraged further investment in improving the local transportation network and infrastructure, more of which is detailed in Section 9.2.
A strong and healthy community	The inclusion of a healthcare centre will help meet the increased need in Tottenham for improved healthcare facilities. The public realm spaces of the development will also be designed to ensure a smooth integration of the development within the existing local community and provide additional open spaces for families and visitors.
Great places	The new development will encourage further investment in the local area and will provide a great space for the local communities and visitors alike with year-round attractions such as the Extreme Sports building. The THFC Experience also celebrates Tottenham's heritage by showcasing Warmington House as part of its design.
The right investment and quality development	There has already been significant investment for the regeneration of Tottenham, which has only been boosted by the planned NDP development.

1.3 Status of the Sustainability Statement

This Sustainability Statement is submitted to support the planning application. It summaries how the environmental sustainability objectives for the development will be delivered by a series of strategies addressing the various environmental issues. Some of these are addressed further in individual technical reports also submitted as supporting documents, which includes the Energy Strategy and Water Strategy.

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2 Policy and Guidance

2.1 Key Policy Drivers

A range of legislative policies have been reviewed to identify the sustainability criteria which the Project must meet in order to be considered suitable for planning permissions. These included national policy, regional policy as defined by the Greater London Authority (GLA) and local policy as given by the London Borough of Haringey.

2.2 National Policy

2.2.1 Building Regulations Part L1A and Part L2A 2013

Part L of the 2013 Building Regulations refers to the Conservation of Fuel and Power in both new construction dwellings (Part L1A) and non-domestic buildings (Part L2A). These documents stipulate a minimum level of efficiency that buildings must be constructed to. The guide to the regulations (Approved Documents) must be read in conjunction with other supporting documents, such as the National Calculation Methodology (NCM) Modelling Guide 2013.

For non-domestic buildings, a Dynamic Simulation Model (DSMs) or a Simplified Building Energy Model (SBEM) is required using approved software. Outputs from these models will determine whether the design is compliant with the regulations. The same outputs are used to determine compliance with complementary policies, including the GLA London Plan.

It is important to recognise that these guides and methodologies define the *minimum* standards required to comply with the regulation. Planning policy requirements often stipulate performance above and beyond these requirements in support of Local Authority Sustainability and Climate Change aspirations.

To achieve this, the following measures are required:

- Enhanced thermal performance of the building fabric in terms of U-values and solar control
- Enhanced building fabric details to deliver an efficient air leakage rate
- Enhanced system efficiencies, including domestic hot water (DHW), ventilation system and lighting
- The consideration of on-site zero and low carbon technologies

2.3 Regional and Local Policies

There are two core governing bodies within the region of the development; these are the Greater London Authority and Haringey Council.

Both the GLA and Haringey Council have developed sustainability focused policies that set out requirements that must be met in terms of energy, water, waste, materials, air quality and landscaping. The GLA ambitions for sustainability development however, will supersede any requirements of the local council unless the local policy is more stringent.

2.3.1 Greater London Authority

The GLA is the governing body that takes responsibility for the welfare, development and prosperity of the City of London. Its role is to ensure the following:

- That there is equal opportunity for all

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- That there is sustainable development
- To oversee the health and welfare of its population
- To adapt and be resilient to climate change
- To provide safe and secure environments

In order to deliver this, the GLA established a set of city wide overarching policies known as the London Plan, that unless otherwise exceed by the local council, are the strategic plan for the development of the city.

2.3.2 London Plan

The London Plan 2011 is the GLA's strategic planning and development plan for the city. The Plan sets out the ambitions and requirements for the city's development in terms of economic, social and environmental progression until 2036. The objective is for the boroughs to integrate their own local plans within the requirement of the overarching London Plan, thereby ensuring that continued sustainable development can occur that best promotes good practice across the city.

There are several key drivers which are specific to the Sustainability Strategy of the Project. These set out the requirements that must be met in terms of energy, water, waste and landscaping and are summarised in the following table.

Table 2-1 Key sustainability requirements of the London Plan

Area	Policy	Requirements
Energy	**5.2** Minimising CO2 Emissions	Developments should achieve a carbon emission improvement of 35% on Part L 2013 Building Regulations, or as per Building Regulations requirements after 2016
	5.3 Sustainable Design and Construction	Developments must demonstrate that sustainable design standards are integral to the proposal and is applicable to the design, construction and operation stage of this project. Further guidance in the Mayor's Supplementary Planning Guidance (SPG)
	5.6 Decentralised Energy in Development Proposal	Development should evaluate the feasibility of decentralised energy networks including Combined Heat and Power (CHP) systems
	5.7 Renewable Energy	Seek to reduce emissions in line with Policy 5.2 via use of onsite renewable energy options. There is a presumption that all major development proposals will seek to reduce carbon emissions by at least 20% through renewable energy where feasible
	5.9 Overheating and Cooling	Developments should demonstrate how the proposal will seek to minimise potential overheating and reliance on air conditioning systems
Water	**5.14** Water Quality and Wastewater Infrastructure	Developments must ensure that adequate wastewater infrastructure capacity is available in tandem with development
	5.15 Water Use and Supplies	Developments should minimise use of mains water by incorporating water saving measures and ensuring residential developments meet the target of 105litres/head/day
Waste	**5.16** Waste net self-sufficiency	Developments should ensure waste self-sufficiency by promoting waste management
	5.17 Waste Capacity	Developments should provide sufficient waste capacity with considerations to minimising waste, encouraging reuse and recycling and the full transport and environmental impact of the lifecycle of waste
	5.18 Construction, excavation and demolition waste	Development are to recycle construction, excavation and demolition waste, wherever practical
	5.19 Hazardous waste	Developments must identify sites for the temporary storage, treatment and remediation of contaminated soil and demolition waste

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Materials	**5.20** Aggregates	Developments should encourage the reuse and recycling of waste and aggregates with targets to achieve 95% recycling/reuse of construction, demolition and excavation waste by 2020 and 80% recycling of that waste as aggregates by 2020
Landscape	**5.10** Urban Greening	Developments should integrated green infrastructure from the early design stages; this includes tree planting, green roofs and soft landscaping
	5.11 Green Roofs	Developments should be designed to include roof, wall and site planting, especially where green roofs and walls are feasible
	5.12 Flood Risk Management	Developments must comply with the flood risk assessment and management requirements over the lifetime of the development
	5.13 Sustainable Drainage	Developments should utilise sustainable urban drainage systems (SUDS) and a site-wide surface water run-off strategy
	5.21 Contaminated Land	Enable the reuse of contaminated and brownfield land where possible

2.3.3 London Borough of Haringey

Haringey Local Plan: Strategic Policies sets out their vision and key policies for the Borough up to 2026 and are consistent and in general conformity with the GLA's London Plan. There are two chapters of relevance to the Sustainability Strategy, *Chapter 04 An Environmentally Sustainable Future* and *Chapter 06 Safer for All*. The key policies in these chapters are summarised below:

2.3.3.1 SP4: Working towards a low carbon Haringey

This sets out requirements for all developments to assess the viability of connecting to existing heating and cooling networks, provision of site wide CHP, and communal heating and cooling systems. This is in line the GLA London Plan expectations and should follow the same energy hierarchy. The Local Plan also specifies a 20% reduction in carbon emissions from onsite renewable energy regeneration, which can include connections to local sources of decentralised renewable energy.

- Non-residential developments are expected to be design and built to a minimum BREEAM 'Very Good' with aims to achieve BREEAM 'Excellent'.
- All new residential buildings are to achieve a minimum 25% reduced in total regulated CO_2 emissions or be zero carbon from 2016.

It is understood that Haringey's policies were drawn up in line with the UK Zero Carbon Buildings Policy. As of July 2015, it was confirmed in the Productivity Plan that the government is dropping the Zero Carbon Buildings Policy first announced in 2007. This means that the 2016 zero carbon homes target and the 2019 non-domestic zero carbon buildings target have both been withdrawn. Consequently, until further confirmation from Haringey Council, it is not certain whether the local policy will take precedent over the Government Productivity Plan.

2.3.3.2 SP5: Water Management and Flooding

This sets out requirements for all developments to be water efficient during construction and operation. The scheme should also seek to reduce all forms of flood risk and improve the water environment, quality and drainage systems.

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2.3.3.3 SP6: Waste and Recycling

This policy aligns with the Mayor's London Plan on waste and recycling; developments are expected to maximise self-sufficiency in waste management capacity and should seek to minimise waste creation, whilst increasing recycling rates in relation to commercial, industrial and municipal waste. The waste strategy should follow the Mayor's waste hierarchy.

2.3.3.4 SP11: Design

This strategic policy outlines requirements for development to be of the highest standard of design, whilst respecting its local context, character and local historic significance. The scheme must demonstrate that impacts on health, climate change, natural resources and biodiversity are minimised by adopting and improving sustainable design and construction techniques.

2.3.3.5 SP13: Open Space and Biodiversity

Developments must protect and enhance Haringey's parks and open spaces and should seek to secure opportunities for additional publicly accessible open spaces. The scheme must also contribute towards the protection, management and enhancement of ecological habitats and where possible include green roofs, rainwater harvesting and bird roosting opportunities. Lastly, developments are also encouraged to provide provisions for children play areas.

2.4 BREEAM

Building Research Environmental Assessment Methodology (BREEAM) is a widely accepted benchmark system that is used to rate a building and development in relation to its environmental sustainability and performance. Schemes are granted credits for passing certain criteria and the overall score will provide the project with a rating of *Outstanding, Excellent, Very Good, Good* or *Pass*.

As previously stated, the London Borough of Haringey requires all non-residential developments to achieve a minimum *Very Good* rating with aspirations for *Excellent*. The preliminary BREEAM assessments for the development can be found in Appendix A. These assessments show that the buildings are meeting the council's target requirements.

2.5 Code for Sustainable Homes

The Code for Sustainable Homes (CfSH) policy was withdrawn on March 2015 and thus is no longer applicable. Previously, Haringey required developments to achieve a minimum of Code Level 4. As such, this Sustainability Strategy has been developed with consideration to the sustainable benchmarks associated with this level. Please see Section 10 for further information.

2.6 Incentives

2.6.1 Feed in Tariffs

The Feed in Tariff (FIT) and Renewable Heat Incentive (RHI) subsidies for renewable technologies make sustainable electricity and heat generation much more financially viable than they would otherwise be. The FIT was developed to encourage the deployment of small scale low carbon energy generation technologies, particularly by organisations, businesses, communities and individuals. The latest FIT tariff rates were published in January 2015.

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As of July 2015, it was announced by the Department of Energy and Climate Change (DECC) that they will carry out a full review of the Feed in Tariff scheme and will consult on a full package of cost control measures in due course.

2.7 Corporate Social Responsibility

Social, environment and economic sustainability and responsibility are becoming more important to governing institutions and to the general public. As a recognised and publically focusses organisation, THFC has a responsibility to take a holistic view on sustainability and its benefits. This development provides THFC the opportunity to become a leader in sustainable and low carbon sporting design in the region. The community focussed buildings of the scheme also provides THFC the ability to further enhance the wellbeing of the local community by engaging with and providing facilities for residents and visitors alike.

2.8 Summary of Key Drivers

The following table highlights the most stringent requirements for the project in relation to the following sustainability themes:

Energy and Carbon	**Water**	**Material**	**Waste**	**BREEAM**
London Plan Policy 5.2	**BREEAM**	**London Plan**	**London Plan Policy 5.16**	**Haringey Council**
Developments should achieve a carbon emission improvement of 35% on Part L 2013 Building Regulations	Achieve a 25-40% reduction in water consumption against baseline levels	Materials should have a low embodied energy, including those that can be reused intact or recycled and should be sustainably sourced	Achieve 95% recycling or reuse of construction, excavation and demolition (CE&D) waste of 95% by 2020	All major non-domestic developments must achieve at least BREEAM rating of 'Very Good'

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3 Energy

3.1 Introduction

This section presents a summary of the proposed energy strategy and measures taken to minimise carbon dioxide emissions of the Project. A full detailed assessment and strategy can be found in the accompanying Energy Statement.

3.2 Key targets

There are a number of key drivers for the implementation of a low carbon and energy efficient developments. These are covered in more detailed in the accompanying Energy Statement but as shown in Section 3.0, range from compliance with policy to whole-life cost reductions and wider stakeholder benefits. In setting minimum standards, the following policy targets have been identified in line with the GLA and Haringey Council Planning Policy:

Table 3-1 Key energy drivers

Policy	Requirements
London Plan 5.2 Minimising CO2 Emissions	Developments should achieve a carbon emission improvement of 35% on Part L 2013 Building Regulations, or as per Building Regulations requirements after 2016
London Plan 5.3 Sustainable Design and Construction	Developments must demonstrate that sustainable design standards are integral to the proposal and is applicable to the design, construction and operation stage of this project.
London Plan 5.6 Decentralised Energy in Development Proposal	Development should evaluate the feasibility of decentralised energy networks including Combined Heat and Power (CHP) systems
London Plan 5.9 Overheating and Cooling	Developments should demonstrate how the proposal will seek to minimise potential overheating and reliance on air conditioning systems
Haringey Local Plan SP4: Working towards a low carbon Haringey	Development should achieve 20% reduction in carbon emissions from onsite renewable energy regeneration. Residential should achieve a minimum of 25% reduction in regulation CO2 emissions.

3.3 Strategy

In accordance with the London Plan and the London Borough of Haringey Planning Guidance, energy efficiency of the development has been achieved through following the energy hierarchy.

The approach aims to minimise energy consumption from the outset through the use of low energy, passive measures and efficiency systems before the deployment of low and zero carbon technologies.

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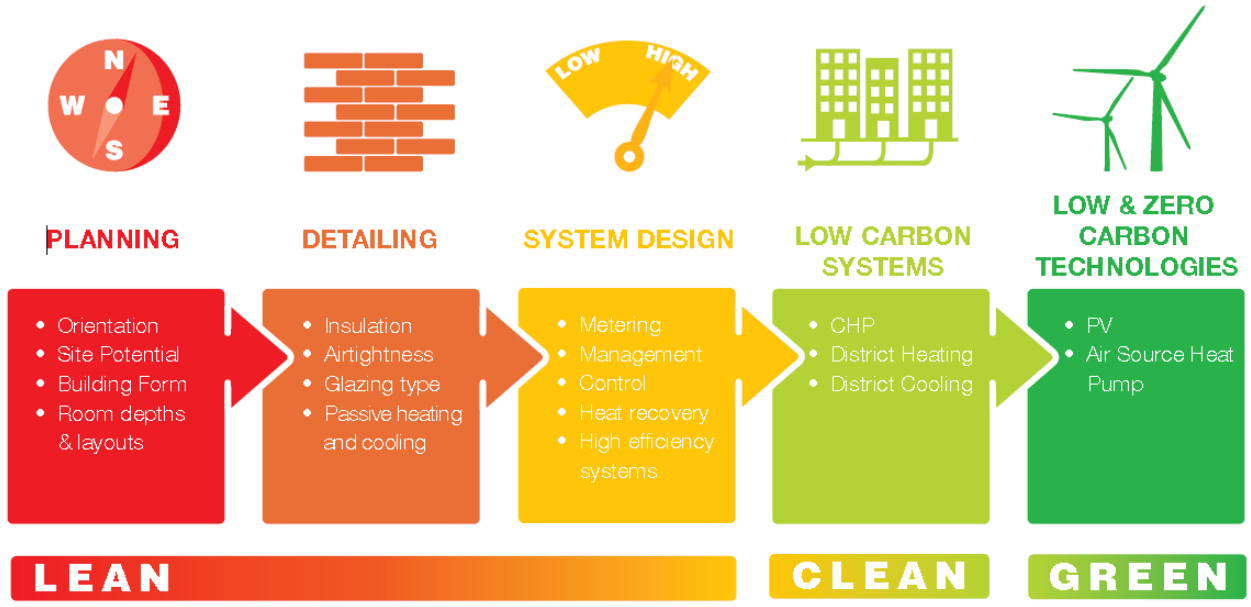

Figure 3-1 Energy hierarchy schematic

This approach aims to minimise energy consumption from the outset from the use of the low energy, passive measures and efficient systems before the deployment of low carbon and renewable energy technologies. The key components of the strategy as described as follows while a full detailed description can be found in the Energy Statement which accompanies this document. This includes the renewable and low carbon energy assessment and Part L energy modelling results.

3.4 Summary of key results

Each stage of the energy hierarchy has been followed to deliver the greatest amount of carbon emissions for the separate developments on site. Reference should be made to the separate Energy Strategy for details of predicted carbon emissions and the overall energy strategy for the development.

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4 Water Strategy

4.1 Introduction

This section describes the proposed approach for water resource management for the Project. The water strategy should be integrated with all other systems as far as possible. The approach will be based on the premise that water is a critical resource, and should be valued as such; the efficient use of water can minimise stress on traditional supplies and reduce the associated energy consumption and carbon emissions from mains water treatment and supply.

4.2 Water Hierarchy

The proposed water strategy shall follow a hierarchical structure to minimise the potential impacts of the development on the local natural resources and existing infrastructure. The approach taken is to reduce water demand as far as possible at source, before considering efficient fixtures and fittings, efficient distribution and alternative sources for lower grade uses. Importantly, given the nature of the site, the strategy will also tie in with a site-wide sustainable drainage strategy which incorporates the use of sustainable drainage systems (SUDS), as prescribed by The London Plan, Policy 5.13.

The water resource strategy shall also incorporate resilience and robustness, to ensure longevity and minimise risk; both to the physical systems and to the site occupants and visitors Figure 4-1. describes the water hierarchy that will be proposed.

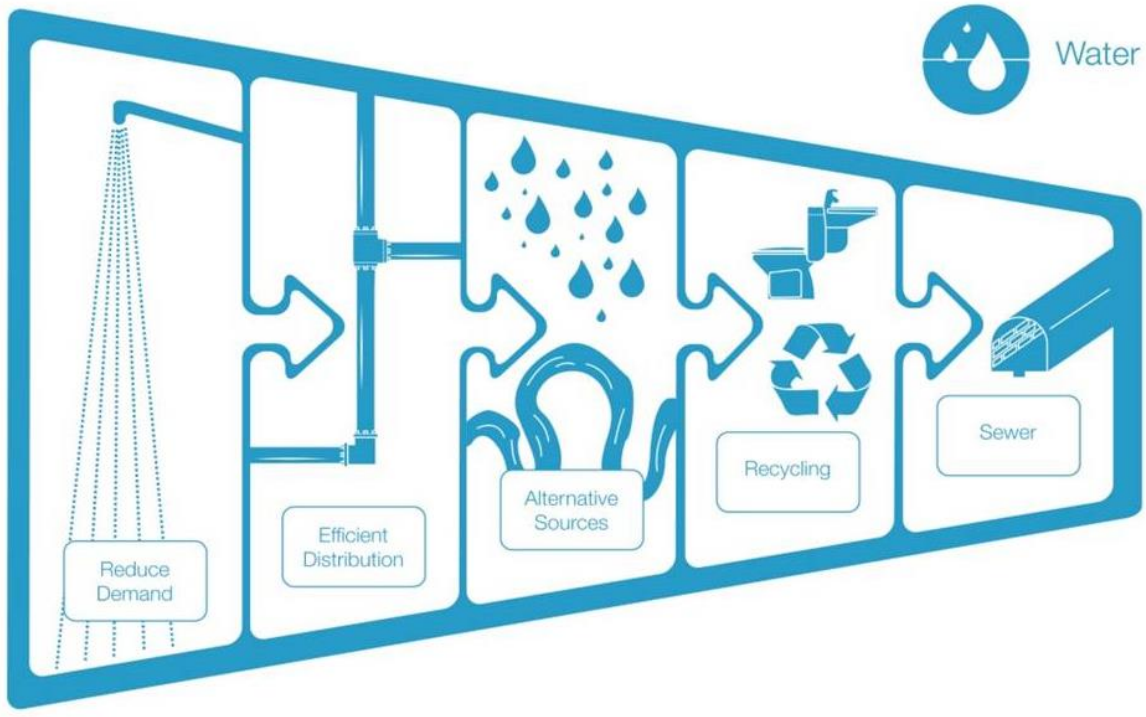

Figure 4-1 Water hierarchy

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4.3 Key drivers

The water strategy at NDP will be influenced by a range of drivers, those outlined as part of the hierarchical strategy but also those from external sources. Key drivers are as follows:

- To ensure efficient resource use and demand.
- To align with key targets and policy, including the London Plan, for site water use management.
- To enable the attainment of credits for BREEAM 'Very Good' rating.
- To reduce the demand for potable water use for landscape.
- To minimise risk of flooding through use of SUDS particularly in critical drainage areas.
- To ensure whole life cost savings associated with efficient water resource system design and operation are outlined and achieved.

4.4 Key targets and policies

The water strategy adopted will seek to meet key targets and policies as outlined earlier in Section 3.0. Key targets are as summarised in the following table.

Table 4-1 Key water targets

Policy	Requirements
BREEAM Wat 01	A minimum 25-40$ improvement in water consumption across the site to align with current industry standards and to contribute to the attainment of BREEAM *Very Good* rating
BREEAM Wat 02	To ensure water consumption is monitored and managed effectively
London Plan Policy 5.12 Flood Risk Management	Developments must comply with the flood risk assessment and management requirements over the lifetime of the development
London Plan Policy 5.13 Sustainable Drainage	Developments should utilise sustainable urban drainage systems (SUDS) and a site-wide surface water run-off strategy
London Plan Policy 5.14 Water Quality and Wastewater Infrastructure	Developments must ensure that adequate wastewater infrastructure capacity is available in tandem with development
London Plan Policy 5.15 Water Use and Supplies	Developments should minimise use of mains water by incorporating water saving measures and ensuring residential developments meet the target of 105litres/head/day

4.5 Reducing Water Demand

4.5.1 Improved Efficiency at Point of Use

Water efficient fixtures and fittings can help reduce site water consumption and demands on waste water services. These represent passive measures and require no behavioural changes by the end users.

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Residential properties were assessed in accordance with the London Plan and will be designed such that it meets the mains water consumption target of 105 litres of less per head per day.

With regards to the non-residential buildings, Haringey Council requires a BREEAM rating of '*Very Good*' to be achieved. This can be translated to give guidance on water reduction levels required to meet this level. Please note that these flow requirements are only used as general guidance and are subject to amendment following client-expressed preferences for specific fixture types in some areas of the development. The combined water strategy will take this into consideration while still aiming to meet BREEAM requirements.

Table 4-2 Guidance on water reduction levels

	Baseline	BREEAM WAT01 – for 3/5 credits	Current Scheme Proposal
WC	6 l/flush	4 l/flush	2.6/4 l/flush
Wash hand basin taps	12l/min	4.5l/min	3.2l/min
Showers	14l/min	6l/min	9l/min
Baths	200l	140l	80l
Urinals (2 or more)	7.5l/bowl/hr	1.5l/bowl/hr	Waterless
Urinals (1 only)	10l/bowl/hr	2l/bowl/hr	Waterless
Domestic sized dishwashers	17l/cycle	12l/cycle	10l/cycle
Domestic sized washing machines	90l/cycle	40l/cycle	39l/cycle

As indicated, the NDP proposes to use water efficient fittings that are overall, significantly more effective than the guidance given by BREEAM.

4.5.2 Increase system efficiency

Improvements in the design and distribution of the water system can reduce leakages and losses across site. Intelligent design that reduces the number of dead legs and minimises overall distribution lengths shall be sought, whilst additional features such as flow restrictors and pressure reducing valves will be considered. The use of metering for all substantial uses and leak detection linked to a Building Management System (BMS) will be encouraged to enable close monitoring and management of water use. This will also contribute towards gaining BREEAM credits.

4.6 Rainwater Harvesting

Rainwater is considered as a relatively clean water source, needing only minimal treatment before use in non-potable water schemes. The use of onsite rainwater harvesting can help reduce the developments demands on the mains water supply and can minimise stress on site drainage systems.

The quantities of rainwater available for use depends on the collection area, surface, filter efficiency and average rainfall. As the graph below illustrates however, rainfall is not a steady daily supply and thus storage vessels required will have to be sized to hold weeks or months of rainwater at a time to meet continual daily demands. All rainwater storage will also require a mains water back up supply to accommodate periods of low rainfall.

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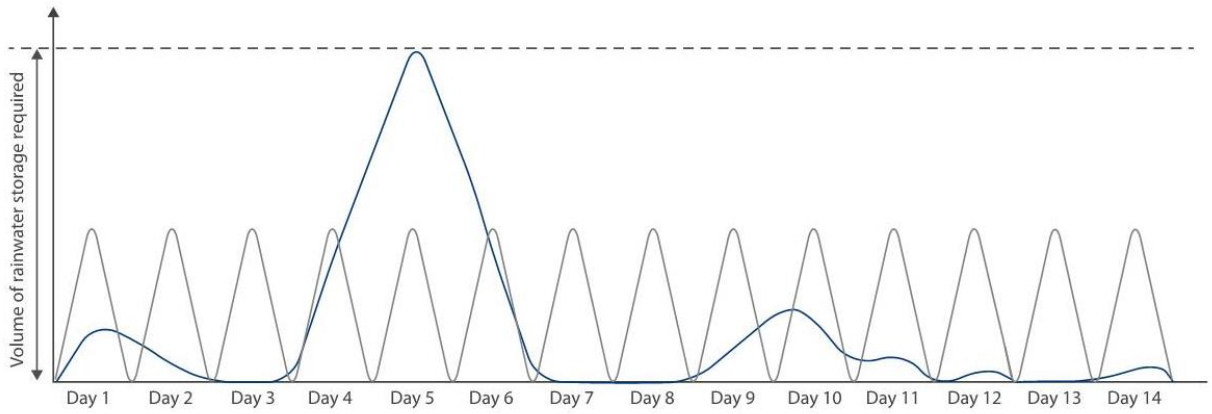

Figure 4-2 Rainwater harvesting

Whilst the Stadium roof presents an opportunity for rainwater harvesting, the Pitch Specialises were not prepared to use harvested rainwater for pitch irrigation and the use of waterless urinals on all General Admission areas reduces the application of harvested rainwater.

With regards to the Southern Development, there is limited space for rainwater harvesting or greywater recycling due to the considerable amount of additional pipework and thus they are not included in the scheme.

4.7 Drainage

The site currently drains to separate surface water and foul sewers. The development will maintain the separation and connect into these networks. Local network upgrades will be made on Worcester Avenue with the addition of a new sewer. This is important in terms of managing the impact of the increase in discharge as a result of the increase in stadium capacity. The installation of water efficient fittings will further minimise the increase in discharge volume.

The surface water drainage of the site will aim to improve the existing situation through the introduction of SUDS across the site. This will provide attenuation of storm water to reduce the flood risk to the downstream catchments as well as to the development itself. Reference should be made to the separate Water Strategy for further details.

The foul drainage of the development will connect into the existing network and upgrades will be provided to ensure that the systems do not back up and avoid exceeding existing network capacity. The Stadium will drain into the High Road sewer to the west, the hotel and residential development to the South to Park Lane. The foul water drainage strategy will require a pumped system and has been approved in principle by TWUL.

4.8 Flood Risk

The site is located in EA Flood Zone 1, which means that the probability of fluvial and tidal flooding in any one year is less than or equal to 0.1%. The National Planning Policy Framework requires that developments in Flood Zone 1 do not increase flood risk to the development or elsewhere through the addition of hard surfaces and increase in surface water run-off.

The provision of surface water attenuation will significantly reduce the risk of surface water flooding for the site. A controlled discharge rate from the underground storage tanks will also reduce the risk of the development surcharging the surface water drainage network and impacting on third parties.

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5 Waste

5.1 Introduction

The management of solid waste is an important element to consider as buildings are designed. Planning for future operational waste management ensures that a building will be able to operate efficiently and sustainably while minimising the impacts on the designed requirements building performance and site users. Good waste management will be essential ensure safe operational practice throughout the development.

5.2 Waste hierarchy

The waste management strategy must ensure that the stadium, hotel and residential towers Facilities Management (FM) teams can collect, store, recycle, re-use and dispose of waste quickly and efficiently and in a discreet manner in line with THFC Waste Management Policy and the waste hierarchy as shown in Figure 5-1. Waste management operations will need to be hidden from visitors and residents to ensure that they do not interfere with the day to day operations within the hotel and residential towers.

Figure 5-1 Waste hierarchy

01 Minimise the amount of waste produced and avoid producing waste in the first instance

02 Re-use items as many times as possible

03 Recycle what you can once you have re-used it and it is no longer able to be used or is no longer needed

04 Turn waste materials into a new product where possible i.e. the generation of waste from energy

05 Dispose of what is unable to be recovered in a responsible way

5.3 Key targets and policies

During the construction of NDP, the management plan will seek to meet all construction waste related targets and policies outlines in the sustainability section of section. Key targets are summarised below.

Policy	Requirements
BREEAM Wst 01	To promote the efficient, effective management and reduction of construction waste by measuring the total construction waste generated per 100m^2 per gross internal floor area and by diverting

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	waste to landfill.
BREEAM Wst 02	To recognise and encourage the use of recycled and secondary aggregates in construction, thereby reducing the demand for virgin materials and optimising the use of materials during the design and construction process.
London Plan Policy 5.16 Waste net self-sufficiency	Developments should ensure waste self-sufficiency by promoting waste management
London Plan Policy 5.17 Waste capacity	Developments should provide sufficient waste capacity with considerations to minimising waste, encouraging reuse and recycling and the full transport and environmental impact of the lifecycle of waste
London Plan Policy 5.18 Construction, excavation and demolition waste	Development are to recycle construction, excavation and demolition waste, wherever practical
London Plan Policy 5.19 Hazardous Waste	Developments must identify sites for the temporary storage, treatment and remediation of contaminated soil and demolition waste
London Plan Policy 5.20 Aggregates	Developments should encourage the reuse and recycling of waste and aggregates with targets to achieve 95% recycling/reuse of construction, demolition and excavation waste by 2020 and 80% recycling of that waste as aggregates by 2020

5.4 Key drivers

THFC is committed to manage its waste in line with the waste hierarchy, as shown in Figure 5-1, and other relevant national and local legislation and guidance. The client recognises that in order for the buildings to operate in a productive and efficient manner good waste management is required. A meeting with THFC staff and the design team was held on 12th February 2015 to discuss the preliminary waste management aims and aspirations.

THFC have produced a Waste Management Policy to ensure that all waste generated is disposed of safely and efficiently to ensure good waste management. This document is principally focussed on the stadium although some of the key objectives and principles are relevant to the hotel and residential towers. The key principles and aims and aspirations for the Stadium, hotel and residential developments are summarised below:

5.4.1 Overarching

- Waste is to be managed in line with the waste hierarchy with zero waste sent to landfill;
- Encourage waste minimisation and promote recycling and re-use with a minimum of 50% recycling aiming to target 60% recycling and composting by 2020 in line with London Major and LBH targets;
- Provide appropriate storage facilities for recyclables, organic (food) and residual wastes; and
- Provision for other wastes including hazardous waste, confidential waste, bulky waste and Waste Electrical and Electronic Equipment (WEEE) should be made available as appropriate;
- Where possible bulk waste on site prior to collection (i.e. compacting) to reduce the volume of waste;
- Keep back of house and public realm areas segregated in terms of waste as far as possible to ensure waste management operations are discreet from residents, guests and visitors;
- Raise awareness of waste management issues by offering waste management training to all staff

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5.4.2 Further drivers – Stadium

THFC Waste Management Policy (dated January 2015)

- Provide designated waste receptacles throughout the stadium to encourage waste segregation at source as far as practicable (i.e. in offices, hospitality and food outlets, kitchens, general concourse areas, player and media facilities and the THFC experience). All waste receptacles must be clearly marked;
- Waste will be collected at regular intervals and where possible, waste will be processed on site prior to collection (i.e. compacting and baling of recyclables) to reduce the volume of waste generated;
- It will be the overall responsibility of the Operations Director to ensure that waste is managed successfully throughout the stadium.

THFC Employer's Requirements (dated August 2014)

- Waste receptacles are to be located adjacent to catering units at lower concourse level only (Level 1) and be sufficient size to contain two 1100 litre wheeled bins;
- Waste is to be cleared immediately after half time and at full time to waste rooms and held temporarily at the main concourse levels (Levels 1 and 5) and transported to the waste and recycling area by lift;
- A minimum of $15m_2$ of waste store space on each general admission level should be allocated. Bagged waste may be stored on the floors and wash down facilities are required. Provision for charging of electric vehicles (EVs) to enable servicing;
- Waste produced in food outlets within the general concourse and hospitality areas will be stored until after the event. It will then be removed to the waste area by lift. All rubbish will be segregated prior to being removed; and
- The requirements for a compactor area will be a minimum of $180m_2$. This must accommodate at least two compactors and skips (for residual are recyclable wastes) with an associated wash down area. A minimum of 5.5m of headroom should be allocated.

5.4.3 Further drivers – Hotel

- Develop productive and efficient waste management practice to ensure the new developments are leading examples of excellent waste management within the hotel sector;
- Assess opportunities for packaging reductions, reuse or recovery, but in a manner that does not negate need to reduce waste volumes;
- Raise awareness of waste management issues by offering waste management training to all staff; and
- Undertake a high level waste audit on an annual basis to track the quantities of residual waste, organics and recyclables that are produced. On a three yearly basis this will be supplemented with a full audit of waste arising's. This will enable the hotel to monitor their performance against targets as well as identify opportunities for improving operational and cost efficiency..

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5.5 Operational Waste Management Plan

5.5.1 Segregation

THFC will segregate waste at source (i.e. in the offices, hospitality and food outlets, kitchens, general concourse areas, player and media facilities, public square and within the THFC experience) into the following four main streams: residual waste, mixed recyclables (glass, paper, cardboard and plastics), organic waste (food and landscaping waste) and other waste as outlined in Figure 5-2. The 'other' waste stream is anticipated to include clinical and hazardous wastes, confidential waste, bulky and WEEE wastes which will arise in small quantities.

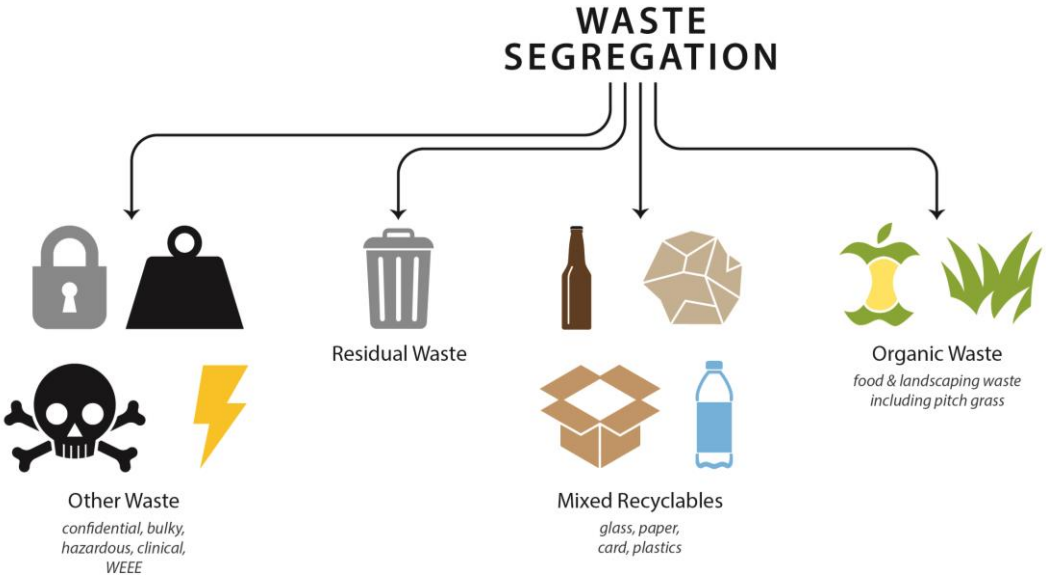

Figure 5-2 Segregation of waste and recyclables within the Stadium

Within the hotel the following four main streams will be segregated: residual waste, mixed recyclables (paper, cardboard and plastics), glass and organic waste (food) as outlined in Figure 5-3.

Figure 5-3 Segregation of waste and recyclables within the Hotel

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Within the residential towers the following three main streams: residual waste, mixed recyclables (glass, paper, cardboard and plastics) and organic waste (food) as outlined in Figure 5-4.

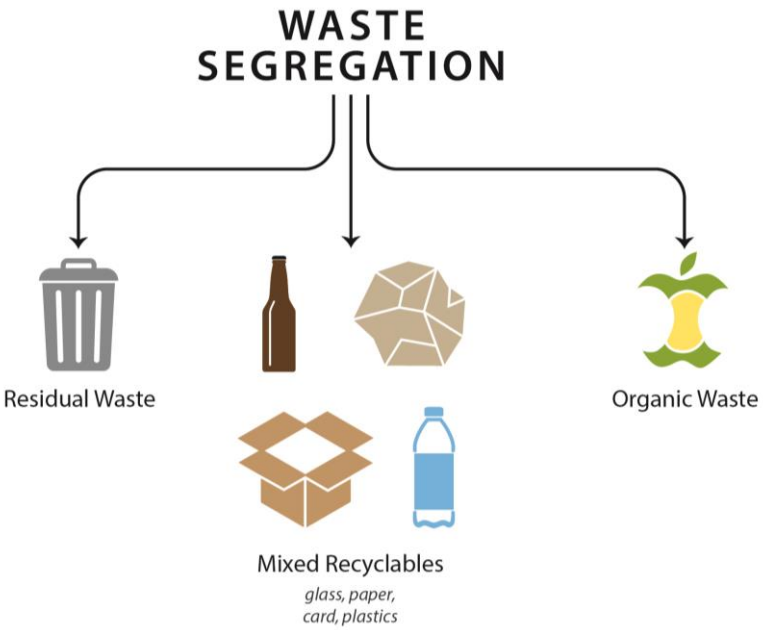

Figure 5-4 Segregation of waste and recyclables in the Southern Residential development

5.5.2 Storage and Collection

Waste management infrastructure within the developments must ensure that waste management operations are hidden and do not interfere with visitors, guests or residents, nor have a detrimental impact on the aesthetics of the buildings. Adequate spatial provision for clean, hygienic and efficient waste management services has been determined in collaboration with the project team.

A summary of how waste will be stored, collected and treated throughout the residential towers is provided below in Table 5-1.

Table 5-1 Summary of storage, treatment and collection strategy

	Storage	Treatment	Collection
Stadium	Bulk at intermediate waste storage rooms, then transfer by FM team to central storage and treatment area	Materials segregation via bins (hazardous, bulky, confidential, WEEE, recyclables) // Mini- MRF // Compactor // Baler	Via service yard in North East
Hotel	FM team bulk in basement, collected by EV and taken to collection point	Materials segregation	Transported by EV from basement to High Road or Park Lane for collection
Residential	Residents move waste to central bin store in basement of towers	Materials segregation	Tower D pick up via Park Lane // Towers A, B and C pick up via Worcester Avenue

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5.6 Outline Planning

At present, the waste strategy for the outline planning application concerning the THFC Experience, the North East Building and the Extreme Sports Centre will be finalised and confirmed upon applying for detailed planning approval.

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6 Materials

6.1 Introduction

THFC is committed to delivering a scheme that addresses the environmental issues associated with the handling and use of materials. The Materials Strategy has been developed to illustrate and clarify these commitments. To ensure that the proposals will achieve best practice standards, the strategy will be developed further as the development progresses in collaboration with the Waste Resources and Action Programme (WRAP).

The Materials Strategy addresses the selection and management of materials arising from demolition and site excavation, materials used in new construction and waste arising from construction processes.

6.2 Construction Materials

Construction materials have far reaching environmental, economic and social impacts, with irresponsible selection and use having consequences that can lead to further habitat destruction, global warming and economic exploitation.

The development will respond to these concerns through a hierarchical approach to material use which endeavours to minimise material use from the outset through efficient design and construction processes, such as offsite pre-fabrication, before looking to employ low impact and locally sourced materials. Recycled, renewably sourced and robust ecologically inert materials will be employed to help reduce the whole life environmental impacts of the development. A cradle-to-cradle approach will be employed, which will consider the life cycle of the material from its sourcing to its potential reuse.

It is expected that the design team will take a holistic view of material sustainability, selecting materials based on a wide criteria including: sourcing, operational performance, aesthetics and BRE Green Guide rating. This will ensure that the materials selected meet the aspirations of the development and are compliant with BREEAM credits MAT01, MAT02.

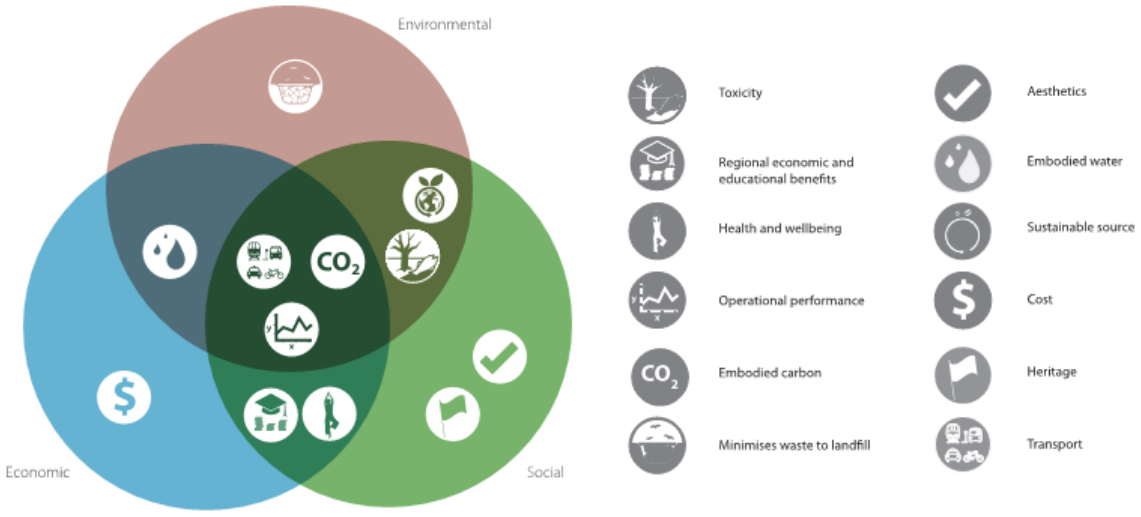

Figure 6-1 Sustainable selection of materials

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During the construction of the Project, the management plan will aspire to meet all material targets and policies outlined. Key targets are summarised below.

Source	Target
BREEAM Mat 01/ Sustainable Design and Construction SPG	To recognise and encourage the use of construction materials with a low environmental impact (including embodied carbon) over the full life cycle of the building. At least three of the key elements of the building envelope must achieve a rating of A+-D in the BRE Green Guide and at least 50% of timber and timber products must be sourced from accredited Forest Stewardship Council (FSC) or Programme for the Endorsement of forestry Certification (PEFC). The design of the development will also maximise the potential to use pre-fabricated elements.
BREEAM Mat 03	To recognise and encourage the specification of responsibly sourced materials for key building elements.

6.3 Approach to materials selection

The lifetime maintenance and management costs of buildings are significantly greater than the costs of construction; as such, by optimising the durability, flexibility and lifespan of construction materials and products, this will help both reduce the life cycle costs but also the associated emissions. This can be achieved through *resource efficient construction*, as given by WRAP. This strategy focusses on carbon reduction by:

- Reduction of materials consumption and waste
- Increase reuse and recycled content
- Facilitating reuse and recyclability at end of life
- Using materials and products with lower embodied carbon and embodied water
- Selecting materials that do not have any scarcity or source security issues
- Optimising durability and lifespan
- Designing in flexibility to adapt to changing needs

6.3.1 Responsible Sourcing of Materials

For this development, there is an aspiration that all materials will be responsibly sourced. Where possible, material will be specified from suppliers who participate in responsible sourcing schemes such as BRE BES 6001:2008 or have an ISO 14001 for key supply chain processes.

Further to this, NDP will source materials that are grown or made locally where appropriate; many natural products can be sourced within or close to London. At least 50% of all timber and timber products will be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as the FSC accreditation, with an aspiration to reach a 90% target.

The use of responsible sourcing will help deliver some credits towards BREEAM accreditation.

6.3.2 Reclaimed and recycled construction materials

The development site will have existing materials which can be reused or recycled .Where possible, NDP will seek reclaim goods and materials and seek options to sensitively reuse existing resources. This will be facilitated by the following means:

- Reuse / recycle materials with significant recycled content
- Where possible, Recycled-Content Building Products are to be used

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- Crushed demolition waste is to be used as fill material where appropriate
- 75% of materials from demolition works are to be redirected from landfill for recycling / reclamation
- Construction materials for the hotel, residential towers, visitors attraction and public realm will include at least 10% recycled content

6.3.3 New construction materials

The specification of new construction materials will prioritise those with minimal environmental impact associated with their use and that are economically feasible. Where possible and appropriate, the Project will aspire to meet the following targets:

- Use of environmentally sensitive, non-toxic building materials
- Use of materials and products that have low Volatile Organic Compounds (VOC)
- Use of insulation materials and refrigerants with low Global Warming Potential (GWP)
- Use of insulation materials and refrigerant with zero Ozone Depletion Potential (ODP)
- Minimising use of new aggregates whilst promoting the use of recycled crushed aggregates (RCA)
- Specifying materials that are graded B-upwards in the BRE Green Guide to Specification
- No use of materials proscribed in the Montreal Protocol

6.3.4 Further commitments

In addition to the above, the Project will commit to the following:

- All contractors will develop and implement a Construction Environmental Management Plan for each site
- All contractors will develop and implement a Construction Waste Management Plan for each site
- All sites will be registered under the Considerate Constructors Scheme
- All demolition work will adhere to The ICE Demolition Protocol

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7 BREEAM

7.1 Introduction

Haringey Council requires all new major non-domestic developments to achieve a '*Very Good*' rating as a minimum under the most up-to-date BREEAM or equivalent scheme. The threshold for major non-residential application in 1000m^2 or more.

BREEAM 2014 New Construction (NC) will be used to assess the buildings within the development. This covers the wide range of building types within its scheme. Separate assessments are to be required for each of the proposed buildings due to their different uses.

The recommended schemes for the buildings are as follows:

- **Hotel** as BREEAM 2014 NC, Building Type: *Other, Residential Institutions*, sub-group *Hotel, hostel, boarding and guest house*
- **Extreme Sports** as BREEAM 2014 NC, Building Type: *Other, Assembly and Leisure*, sub-group *Indoor or outdoor sports, fitness and recreation centre*
- **North-East Building(Health Centre)** as BREEAM 2014 NC, Building Type: *Public (non-housing), Healthcare*, sub-group *Health centres and clinics* or *GP surgeries (*dependent on final use)

For the hotel which is a detailed planning application, a full pre-assessment has been carried out using BREEAM New Construction fully fitted requirements. Please refer to Appendix A for the preliminary assessment.

For buildings applying for outline planning application (Extreme sports and the North-East Building), a BREEAM strategy has been outlined with full pre-assessments to be carried out within the future detailed planning application.

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7.2 Preliminary Scoring

The figures below summarises the target score and potential score. Note that the target score includes both the Low Risk and Medium Risk scores.

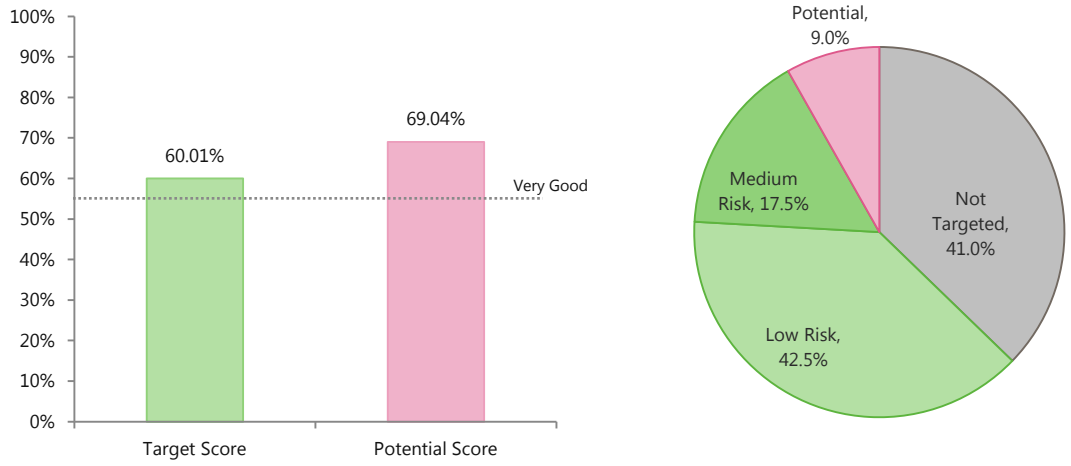

Figure 7-1 Preliminary BREEAM score for the Hotel development

Building Type	Score	Targeted Percentage	BREEAM Level
Hotel *Other, Residential Institutions*, sub-group *Hotel, hostel, boarding and guest house*	Total Targeted Score	60%	Very Good
	With Potential Further Score	69%	Very Good

A *Targeted* and *Potential* score has been established for the buildings based on the repots and drawings produced to date. As indicated, the Hotel is scoring above the required 55% to achieve a BREEAM *'Very Good'* rating, with an adequate margin of 5%. A number of extra potential credits have been highlighted within the tracking schedule (see Appendix A) It is recommended that these potential credits are assessed at the next stage to investigate their viability.

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8 Code for Sustainable Homes

8.1 Introduction

The Code for Sustainable Homes policy was withdrawn in March 2015. Previously, residential buildings were expected by Haringey Council to achieve Code Level 4. Despite its withdrawal, as requested by the Council, the obsolete scheme has been used as a framework to inform the sustainable design of the residential components.

The following sections highlights the key credit areas in which the development would score low risk points.

8.2 Energy

8.2.1 ENE 01: Dwelling Emission Rate

Preliminary SAP calculations have shown that the dwelling would not achieve the three credits required for Code Level 4 without connecting to district heating.

With district heating, it would achieve the equivalent of four credits, exceeding the requirements for Code Level 4, in comparison to the two credits without.

8.2.2 ENE 02: Fabric Energy Efficiency Credits

There are no minimum requirements for this credit for Code Level 4 which has a total of nine credits.

Even without district heating, the tested dwelling scores full credits for the fabric energy efficiency, which is significantly better than the minimum level required of Code Level 6.

8.2.3 ENE 03: Energy Display Devices

Two credits are available for displaying energy consumption data to occupants, which is easily achievable.

8.3 Water

8.3.1 WAT 01: Indoor water use

To achieve Code Level 4, the water consumption must be less than 105l/p/day. This is equal to the water consumption level specified as the maximum by the London Plan and is also achievable for this development.

8.4 Materials

8.4.1 MAT 01: Environmental Impact of Materials

This credit assesses the material rating of the five key building elements (roof, external wall, internal walls, floors and windows) based on the 2008 BRE Green Guide. There are 15 credits in total

As all materials within this development are expected to achieve a minimum B rating, the NDP will score highly in this category.

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8.4.2 MAT 02: Responsible Sourcing of Materials

Six credits are available for the responsible sourcing of materials; as this development has the aspiration that all materials will be responsibly sourced and locally source where possible, the Project is expected to score highly in this category.

8.5 Surface Water Run-off

8.5.1 SUR 02: Flood Risk

The development will automatically achieve full credits for being located within Flood Zone 1.

8.6 Health and Wellbeing

8.6.1 HEA 04: Lifetime Homes

Haringey Council SP2 requires that new developments are built to 100% Lifetime Homes Standards, and thus the development will automatically score all four credits.

8.7 Summary

From the preliminary analysis of the residential towers, the development would score highly in many of the key categories that have the highest credits available and highest weighing attached. In many cases, the development would score significantly more than the level required for Code Level 4.

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9 Further strategies

9.1 Public Realm

Within the Project, there are a number of public realm spaces; these further contribute towards the overall sustainability strategy by:

- Providing valuable community spaces and amenities that will support the integration of the new development within the existing area
- Ensuring that the development thrives during non-match days by providing adaptable spaces that can be used year-round and potentially for public events
- Improving upon the current ecological value of the site, which will be enhanced in line with Haringey Council's Biodiversity Plan – this includes the strategic planting of trees and indigenous species

9.2 Transport

As it is proposed that the new development remains on the current site, existing relationships with the London Borough of Haringey can be further maintained and developed. The Club has already been working with the Borough for some time on improving the transport options for accessing the site, which included introducing the Controlled Parking Zone to alleviate pressure on the streets surrounding the Stadium.

The public transportation infrastructure is already in place, with four railway stations and up to 144 buses an hour serving the stadium area. There has been significant investment over the years from Transport for London, Network Rail and Haringey Council which will deliver significantly enhanced capacity for increased visitors to the new stadium. In particular, the improvements to the Victoria Line have already enhanced the quality and frequency of public transport serving the area.

These efforts are being recognised through the shift in travel patterns to the stadium. In 2003, over 60% of visitors travelled by car; by 2014, this has now been reduced to 42% for weekend fixtures. THFC has set their own target of reducing this number down to a maximum of 23% in the future. The continued modal shift towards public transport will be achieved through the following, many of which are already underway:

- Actively promoting the new stadium as a 'Public Transport Destination', similar to Wembley Stadium
- White Hart Lane station train service is coming under the control of London Underground in 2015
- White Hart Lane station is also planned for redevelopment
- Improvements at Seven Sisters station interchange is underway
- Network Rail are scheduled to introduce 'three tracking' for the section through Tottenham Hale and Northumberland Park
- THFC will be operating two new shuttle bus services
- Removal of the Tottenham Hale Gyratory is now largely complete which involves the construction of a bus station whilst also alleviating congestion
- An expanded matched-day Controlled Parking Zone will take place
- Construction for the Cycle Superhighway 1 (CS1) which will run between White Hart Lane and Liverpool Street Station has commenced

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Appendix A BREEAM Assessment

1.0 Introduction

The Building Research Establishment Environmental Assessment Method (BREEAM) is a leading design and assessment method for sustainable buildings. It sets the standard for best practice within the industry by using recognised measures of environmental performance, which are set against established benchmarks. These measures range from categories such as Energy to Ecology, and seek to evaluate the building across its lifespan – from the design to the construction and subsequent operation of the development.

1.1 Applicability

A BREEAM pre-assessment will identify the building's environmental strengths and weakness, after which the client can specify improvements to the building performance before having the assessment formalised. This flexibility of BREEAM subsequently allows the assessment to exert influence on the building design from an early stage.

For this development, the BREEAM New Construction 2014 Scheme will be used to assess the buildings and determine their score and BREEAM rating. The award of a BREEAM certificate is in two stages:

- **Interim Design Stage**

The BREEAM scheme offers certification of the building as designed. The assessment should be completed and certified at, or shortly after, RIBA Stage 4 and is based on design team drawings, specifications, contract terms and conditions, design studies and reports.

The role of the assessor during this stage is to assess the evidence submitted and determine whether credits can be awarded by comparison to the published BREEAM benchmarks.

- **Post-Construction Stage**

Shortly after project completion and handover, the building is reassessed based on as-built information which will largely be provided by the contractor(s). The purpose is to demonstrate the completed building still meets the requirements of the rating achieved at the design stage.

There is significant risk that a completed building will not achieve the same score and rating as given during the design stage. This is likely to be for two reasons:

- Documentary evidence derived from the contractor is inadequate, e.g. poor site records
- The design has been changed between Design Stage and completion

1.2 Procurement routes

The timing of the Design Stage Report and the award of the interim certificate is dependent upon the programme and procurement route. Typically, it may occur shortly after RIBA Stage 4. The responsibility for the delivery of the design information must be determined and agreed, particularly if there is a contractor design element. Where this is the case, the Design Stage Report is completed and submitted sometime after the appointment of the contractor. Appropriate terms and conditions must form part of the contract to ensure that the contractor's design information is made available to the BREEAM assessor at the earliest opportunity.

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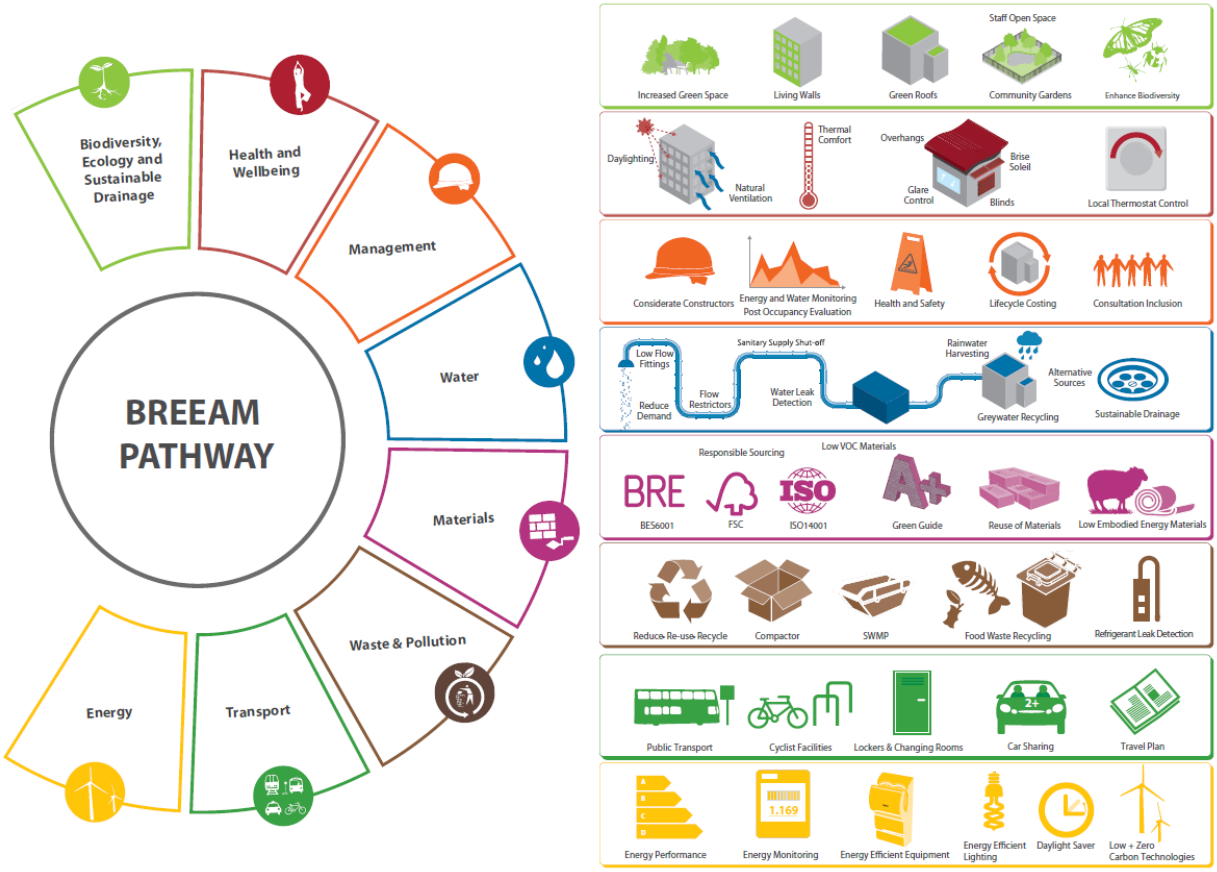
2.0 BREEAM Methodology

The assessment is broken down into nine categories, each of which comprises of a number of credits:



An extra 10% of credits are also available for achieving exemplary performance standards for some credits and for including innovative features or systems.

Credits are awarded based on the evidence received and totalled to provide a BREEAM score. The score is then converted into a rating as follows:

Rating	Score
Pass	30-45%
Good	45-55%
Very Good	55-70%
Excellent	70-85%
Outstanding	85%+

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2.1 BREEAM Scoring

Within each category, there are a number of relevant issues assessed as 'credits'. The number and value of individual credits are not equal. As such, BREEAM puts particular emphasis on measuring energy consumption, carbon emission and health and wellbeing, whilst placing less on waste and water.

To achieve BREEAM 'Very Good' ratings, the building must meet achieved scores in excess of 55%, or in excess of 70% of a BREEAM rating of 'Excellent'. In addition to this, there are a number of mandatory credits to be achieved for these ratings:

BREEAM issue	**Mandatory Requirement**	
	Very Good	***Excellent***
Man 03: Responsible construction practices	None	One credit
Man 04: Commissioning and handover	None	Criterion 10
Man 05: Aftercare	None	One credit
Ene 01: Reduction of energy use and carbon emissions	None	Five credits
Ene 02: Energy monitoring	One credit	One credit
Wat 01: Water consumption	One credit	One credit
Wat 02: Water monitoring	Criterion 1	Criterion 1
Mat 03: Responsible sourcing of materials	Criterion 1	Criterion 1
Wst 03: Operational waste	None	One credit
LE 03: Minimising impact on existing site ecology	One credit	One credit

2.2 Roles and Responsibility

The diagram below identifies the design teams credit roles and responsibilities. A number of credits are associated to more than one design team member, as this is the case collaboration between the design team is important to achieving BREEAM.

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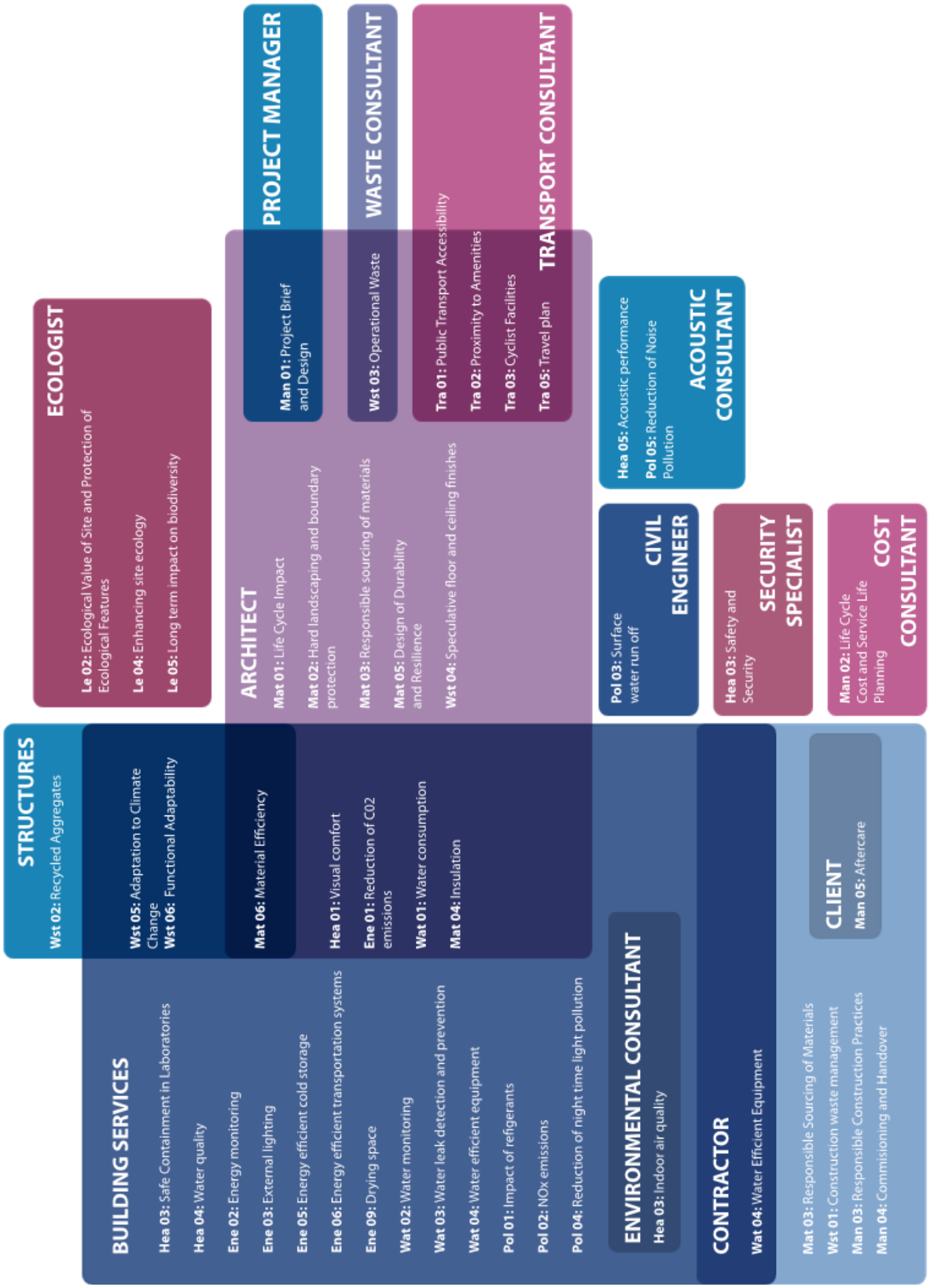
STRUCTURES
Wst 02: Recycled Aggregates
ECOLOGIST
Le 02: Ecological Value of Site and Protection of Ecological Features
Le 04: Enhancing site ecology
Le 05: Long term impact on biodiversity
PROJECT MANAGER
Man 01: Project Brief and Design
WASTE CONSULTANT
Wst 03: Operational Waste
TRANSPORT CONSULTANT
Tra 01: Public Transport Accessibility
Tra 02: Proximity to Amenities
Tra 03: Cyclist Facilities
Tra 05: Travel plan
ARCHITECT
Mat 01: Life Cycle Impact
Mat 02: Hard landscaping and boundary protection
Mat 03: Responsible sourcing of materials
Mat 05: Design of Durability and Resilience
Wst 04: Speculative floor and ceiling finishes
ACOUSTIC CONSULTANT
Hea 05: Acoustic performance
Pol 05: Reduction of Noise Pollution
CIVIL ENGINEER
Pol 03: Surface water run off
SECURITY SPECIALIST
Hea 03: Safety and Security
COST CONSULTANT
Man 02: Life Cycle Cost and Service Life Planning
BUILDING SERVICES
Hea 03: Safe Containment in Laboratories
Hea 04: Water quality
Ene 02: Energy monitoring
Ene 03: External lighting
Ene 05: Energy efficient cold storage
Ene 06: Energy efficient transportation systems
Ene 09: Drying space
Wat 02: Water monitoring
Wat 03: Water leak detection and prevention
Wat 04: Water efficient equipment
Pol 01: Impact of refrigerants
Pol 02: NOx emissions
Pol 04: Reduction of night time light pollution
Wst 05: Adaptation to Climate Change
Wst 06: Functional Adaptability
Mat 06: Material Efficiency
Hea 01: Visual comfort
Ene 01: Reduction of CO2 emissions
Wat 01: Water consumption
Mat 04: Insulation
ENVIRONMENTAL CONSULTANT
Hea 03: Indoor air quality
CONTRACTOR
Wat 04: Water Efficient Equipment
Mat 03: Responsible Sourcing of Materials
Wst 01: Construction waste management
Man 03: Responsible Construction Practices
Man 04: Commissioning and Handover
CLIENT
Man 05: Aftercare

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3.0 Scope of BREEAM Assessment

3.1 Planning Requirements

London Borough of Haringey requires that all non-residential developments are to be designed and built to a minimum BREEAM *'Very Good'* with aspirations for BREEAM *'Excellent'*. The threshold for major non-residential applications is 1000m^2 or more.

3.2 Proposed Development

BREEAM 2014 New Construction (NC) will be used to assess the proposed buildings on site. BREEAM 2014 New Construction covers a wide range of building types within the scheme. Separate assessments however will be required for each proposed building.

The recommended schemes for the buildings are as follows:

- **Hotel** as BREEAM 2014 NC, Building Type: *Other, Residential Institutions*, sub-group *Hotel, hostel, boarding and guest house*
- **Extreme Sports** as BREEAM 2014 NC, Building Type: *Other, Assembly and Leisure*, sub-group *Indoor or outdoor sports, fitness and recreation centre*
- **Healthcare** as BREEAM 2014 NC, Building Type: *Public (non-housing), Healthcare*, sub-group *Health centres and clinics* or *GP surgeries (*dependent on final use)

For detailed planning application, a full pre-assessment will only be carried out for the Hotel using BREEAM New Construction fully fitted requirements.

For outline planning application, a BREEAM strategy will be outlined for both the Extreme Sports building and Healthcare Centre, with full pre-assessments to be carried out a later design stage.

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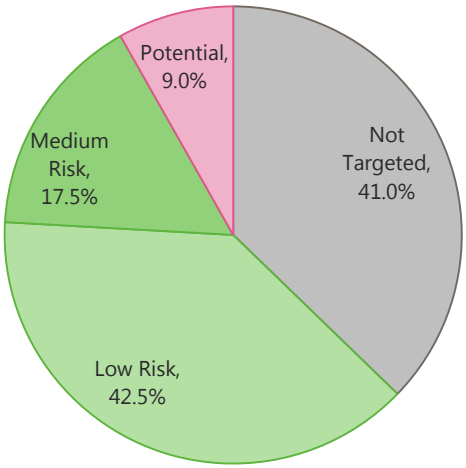
4.0 Preliminary Assessment Scores

4.1 Targeted Rating

After a preliminary review of the development and taking into account the site opportunities and constraints, it has been decided that a target of BREEAM '*Very Good*' with a healthy margin will be aimed for.

4.2 Summary of Score

The figures below summarises the target score and potential score. Note that the target score includes both the Low Risk and Medium Risk scores.



Building Type	Score	Targeted Percentage	BREEAM Level
Hotel *Other, Residential Institutions*, sub-group *Hotel, hostel, boarding and guest house*	Total Targeted Score	60%	Very Good
	With Potential Further Score	69%	Very Good

A *Targeted* and *Potential* score has been established for the buildings based on the repots and drawings produced to date. As indicated, the Hotel is scoring above the required 55% to achieve a BREEAM *'Very Good'* rating, but with an adequate margin of 5%. A number of extra potential credits have been highlighted within the tracking schedule (see Section 8.0 of Appendix 1). It is recommended that these potential credits are assessed at the next stage to investigate their viability.

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5.0 Credits Summary

Within the targeted score, there are low and medium risk credits; medium risk credits are those that are being targeted but at this stage it is not certain whether they can be achieved.

The table below highlights credits in the medium risk credits. In order to achieve these credits, commitment from the client or design team will be required to ensure they are achievable.

Issue ID	Total Credits Available	Targeted Credits – Medium Risk	Requirements
Man 03 – Monitoring of Construction Site Impacts	2	2	Responsibility to monitor construction site impact includes: • Monitor and record data on principal constructor's and subcontractors' energy and water consumption and total carbon dioxide emissions • Monitor and record data on transport movements and impacts resulting from transport of materials and waste. In addition, report the total fuel consumption and carbon emissions These requirements can be achievable if there is the cost and time commitment from the onset from the client and contractors.
Man 04 – Testing and Inspecting Building Fabric	1	1	The integrity of the building fabric is quality assured through completion of post construction testing and inspection. This can be demonstrated through the completion of a thermographic survey as well as an airtightness test and inspection. The survey and testing must be undertaken by a Suitably Qualified Professional. Any defects identified must be rectified prior to building handover and close out. This is achievable but will incur additional expensive and will therefore need client approval.
Man 04 - Handover	1	1	A Building User Guide (BUG) is developed prior to handover, for distribution to the building occupiers and premises managers. T training schedule is also prepared which includes the following as a minimum: • Building design intent • Available aftercare provisions and contact • Introduction and demonstration of installed systems and key features • Introduction to the BUG and other relevant building documentation • Maintenance requirements This is achievable but will require additional time and cost expense to the client.
Man 05 – Seasonal Commissioning	1	1	The following seasonal commissioning activities will be completed over a 12 month period, once the building becomes substantially occupied: • Testing of all building services under full load conditions • Testing during periods of extreme occupancy • Interviews with building occupants when affected by the building systems • Recommissioning of systems following any worked needed with update to the Operations & Maintenance manual • Review thermal comfort, ventilation and lighting at three, six

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			and nine moth intervals by measurement or surveys This is achievable but will require additional time and cost expense to the client.
Man 05 – Post Occupancy Evaluation (POE)	1	1	This requires the client to make a commitment to commission a POE, which must be carried out by an independent third party and one year after initial building occupation. The requirements are: • A review of the design intent and construction process • Feedback on the design and environmental conditions of the building These requirements are readily achievable but require a cost commitment from the client.
Man 05 – Exemplary Level Criteria	1	1	There is or will be operational infrastructure and resources in place to coordinate the following activities at quarterly intervals for the first three years of building occupancy: • Collection of occupant satisfaction, energy consumption and water consumption data • Analysis of data to check that the building is performing as expected and to make any necessary adjustments • Setting targets for reducing energy and water consumption and to monitor progress towards these • Feedback any 'lessons learnt' to the design team and developer • Provision of actual annual building energy, water consumption and occupant satisfaction data to BRE Again, these requirements are achievable but requires a cost and time commitment from the client.
Hea 01 – Glare Control	1	1	A glare control strategy is in place to design out any potential for disabling glare. The strategy avoids increasing lighting energy consumption by ensuring that the system is design to maximise daylight levels under all conditions while avoiding disabling glare in sensitive locations. The system should not inhibit daylight from entering the space and the use of location of shading does not conflict with the operation of the lighting control systems. This is achievable but will need to considered at an early design stage and will involve input from various disciplines within the design team.
Hea 01 – View Out	1	1	95% of the floor area is within 7m of a wall which has a window or permanent opening that provides a view out; the window must be ≥20% of the surrounding wall area. This is an easy credit to achieve but considerations must be given to how this might affect the indoor building environment.
Hea 01 – Internal and External Lighting Levels, Zoning and Control	1	1	All fluorescent lighting is fitted with high frequency ballasts; for areas where computers are regularly used, lighting must comply with the guidance given in the CIBSE Lighting Guide. All internal and external lighting must be designed to provide illuminance levels appropriate to the tasks and use of the space. Internal lighting should be zoned to allow for occupant control. This is an achievable target but will need to be considered early on in the building environment modelling.
Hea 05 – Acoustic Performance	4	3	Requires an acoustician to be hired to set performance criteria and testing regime for sound insulation, indoor ambient noise level and reverberation times. This is achievable, but will be an additional expense so will require

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			client approval.
Ene 08 – Energy Efficient Building	2	2	The following is required to demonstrate compliance: • Identify the building's unregulated energy consuming loads and estimate their contribution to the total annual unregulated energy consumption of the building • Identify the systems and/or processes that use a significant proportion of the total annual unregulated energy consumption of the development and its operation • Demonstrate a meaningful reduction in the total annual unregulated energy consumption This is easily achievable through procurement of energy efficient equipment which will ensure optimal performance and deliver energy savings in operation.
Tra 03 – Cyclist Storage	1	1	One space per 10 visitors/beds.
Tra 03 – Cyclist Facilities	1	1	At least two of the following facilities provided: showers, changing facilities, lockers, drying spaces
Tra 04 – Car Parking Capacity	2	2	Maximum parking capacity of 1 space per 6 building users
Tra 05 – Travel Plan	1	1	A travel plan has been developed as part of the feasibility and design stages with a site specific travel assessment. Travel plan should include a package of measures to encourage the use of sustainable modes of transport and movement of people and goods. If the occupier is known, they must be involved in the development of the travel plan and must confirm that it will be implemented post-construction. Achievable but will require integration from early design stages.
Wat 04 – Water Efficient Equipment	1	1	All unregulated water demands are identified that could be realistically mitigated or reduced. Systems or processes are identified to reduce this demand and demonstrate a meaningful reduction in total water demand of the building. Achievable through the specification of water efficient equipment.
Wst 02 – Recycled Aggregates	1	1	Minimise the demand for virgin material through use of recycled and secondary aggregates: • % of high grade aggregate that is recycled or secondary must meet the minimum levels as given in the BREEAM guide • Total amount of recycled or secondary aggregate is greater than 25% by weight or volume of the total high grade aggregate specified for the project • Recycled or secondary aggregates are either construction, demolition and excavation waste or secondary aggregates obtained from a non-construction post-consumer industrial by product source. This is in line with the London Plan policy on aggregates and waste.
Pol 05 – Reduction of Noise Pollution	1	1	Noise impact assessment in compliance with BS 7445 has been carried out by a suitably qualified acoustic consultant. The noise levels from the development must be not greater than +5dB during the day and +3dB during the night, or where it is, measures have been installed to attenuate the noise at its source to comply with the levels. Should be achievable as development is on existing THFC site, but will require cost commitment from the client.

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The following table highlights the potential additional credits which will need to be confirmed by the design team and/or client if they are feasible. If all credits can be achieved, a '*Very Good* 'rating with a high margin will be achieved.

Issue ID	Total Credits Available	Targeted Credits – Medium Risk	Requirements
Man 01: Stakeholder Consultation (Third Party)	1	1	Prior to completion of the Concept Design (RIBA Stage 2), the design team must consult all relevant third party stakeholders. Consultation must cover the minimum consultation content. The project must demonstrate how the stakeholder contributions and outcomes have influenced or changed the initial project brief and concept design. Although this is standard practice, it will be an extra expense and will therefore require client approval.
Hea 02 - Ventilation	1	1	Building has been designed to minimise the concentration and recirculation of pollutants in the building. Not currently included in scope but is achievable.
Hea 02 – Exemplary Level Criteria	2	1	Further requirements for the VOC emissions of products, more onerous than those of the first credit. Architect to confirm low VOC products can be specified. Contract preliminaries to ensure that testing is undertaken to show compliance. Client to confirm whether they would be happy for this to be undertaken. This is not seen as difficult however will be at an extra cost to the client.
Ene 01 – Energy Performance	12	3	The Energy Strategy is currently being undertaken. It is uncertain how many credits can be achieved until this has been finalised. The score will be dependent on whether connectivity to district heating is available.
Wat 01 – Water Consumption	5	1	The development must achieve a 12.5% improvement over baseline building water consumption. The Water Strategy is currently being undertaken. With the inclusion of water efficient fittings, there is potential to achieve more than 1 credit but this will not be known until the Water Strategy has been finalised.
Mat 06 – Material Efficiency	1	1	This credit is about identifying material efficiency opportunities and ensuring that appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life. This should have started occurring from Stage 1.
Wst 05 – Adaption to Climate Change	1	1	Conduct a climate change adaptation strategy by end of RIBA Stage 2. This should be occurring now.
Wst 05 – Exemplary Credit	1	1	Must either achieve Hea 04 – Adaptability for a project climate change scenario which requires thermal modelling at an additional cost. This is achievable. OR; Achieve at least 8 credits in Ene 01 which is highly unlikely.
Pol 03 – Surface Water Run Off (Second credit)	1	1	Drainage design measures are specified to ensure that post development run-off volume over the lifetime of the development is no greater than it would be been prior with any addition run-off prevented from leaving site using Sustainable Drainage System techniques. If this is not possible, justification from the Appropriate Consultant and design measures are specified to reduce run off to limiting discharge. This cannot be confirmed until the Water Strategy has been finalised.

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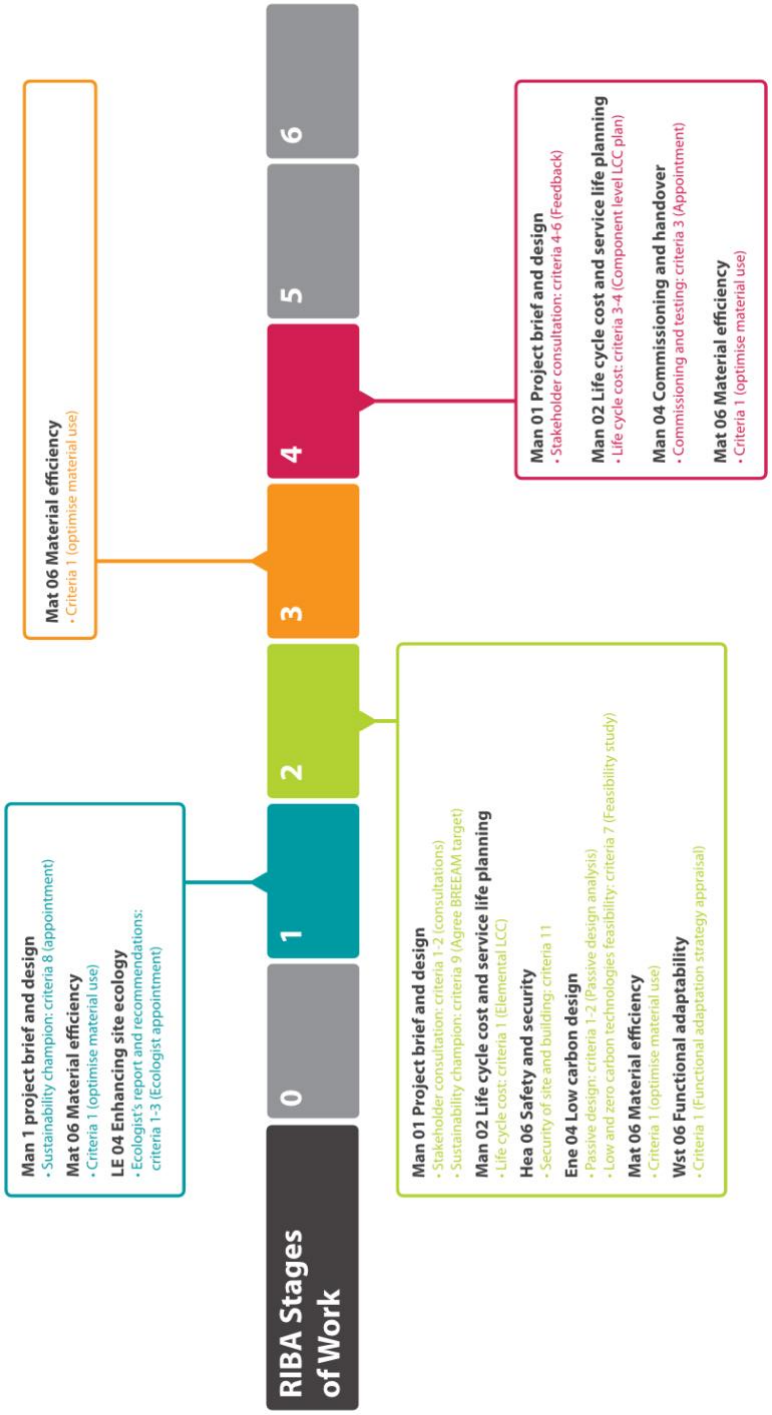
6.0 Other Considerations

Certain BREEAM credits require inputs at specific stages of the development, these credits are listed below and action should be taken to consider them immediately as some are relevant to RIBA Stage 1 and 2.


RIBA Stages of Work
0
1
2
3
4
5
6
Man 1 project brief and design
• Sustainability Champion: criteria 8 (appointment)
Mat 06 Material efficiency
• Criteria 1 (optimise material use)
LE 04 Enhancing site ecology
• Ecologist's report and recommendations: criteria 1-3 (Ecologist appointment)
Man 01 Project brief and design
• Stakeholder consultation: criteria 1-2 (consultations)
• Sustainability champion: criteria 9 (Agree BREEAM target)
Man 02 Life cycle cost and service life planning
• Life cycle cost: criteria 1 (Elemental LCC)
Hea 06 Safety and security
• Security of site and building: criteria 11
Ene 04 Low carbon design
• Passive design: criteria 1-2 (Passive design analysis)
• Low and zero carbon technologies feasibility: criteria 7 (Feasibility study)
Mat 06 Material efficiency
• Criteria 1 (optimise material use)
Wst 06 Functional adaptability
• Criteria 1 (Functional adaptation strategy appraisal)
Mat 06 Material efficiency
• Criteria 1 (optimise material use)
Man 01 Project brief and design
• Stakeholder consultation: criteria 4-6 (Feedback)
Man 02 Life cycle cost and service life planning
• Life cycle cost: criteria 3-4 (Component level LCC plan)
Man 04 Commissioning and handover
• Commissioning and testing: criteria 3 (Appointment)
Mat 06 Material efficiency
• Criteria 1 (optimise material use)

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7.0 Next Steps

The following steps should be undertaken at the next stage to ensure the BREEAM Very Good target is achieved.

- Register schemes with the BRE
- Undertake a workshop with the team to ensure they are on track to achieve the targeted credits
- Identify with the design team which of the potential credits could be achieved.
- Start collation of evidence for early stage credits
- Input BREEAM requirements into contract documents and specifications

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8.0 BREEAM Tracking Schedule

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BREEAM NC 2014 (Hotel) Pre-Assessment

THFC Hotel

BRE Ref: BREEAM-xxxx-xxx

STAGE B PRE ASSESSMENT

REV 00 EARLY DISCUSSIONS

06/08/2015

BREEAM SCORE SUMMARY

	CURRENT SCORE	0.00%	
	TARGET RATING	55% - 70%	Very Good
	TARGET SCORE	60.01%	Very Good
	POTENTIAL SCORE	69.04%	Very Good

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
MANAGEMENT										
Man 01 - Project Brief and Design										
Stakeholder Consultation (Project Delivery)	1	0.57%	Stage 2	1					PM/Architect	Project Execution Plan or Minutes from Start-up Meeting defining roles and responsibilities within the project team.
Stakeholder Consultation (Third Party)	1	0.57%	Stage 2 Stage 4			1			PM/Architect	Consultation of all stakeholders must be completed.
Sustainability Champion (Design)	1	0.57%	Stage 1 Stage 2	1					BH BREEAM	Sustainability Champion for the Project chosen from the Project Team.
Sustainability Champion (Monitoring Progress)	1	0.57%	Stage 2 Stage 3	1					SC (BH)	Sustainability Champion monitors progress against the performance targets throughout the design process.
Man 02 - Life Cycle Cost and Service Life Planning										
Elemental Life Cycle Cost (LCC)	2	1.14%	Stage 2				2		Cost Consultant	
Component Level LCC Plan	1	0.57%	Stage 4				1		Cost Consultant	
Capital Cost Reporting	1	0.57%					1		Contractor	Report capital cost to BREEAM Assessment Scoring and Reporting Tool.
Man 03 - Responsible Construction Practices										
Pre-Requisite	Pre-requisite			1					Contractor	
Environmental Management	1	0.57%		1					Contractor	EMS covering main contractor operations.
Sustainability Champion	1	0.57%	Stage 5 Stage 6	1					SC	Sustainability Champion monitors progress against the BREEAM targets during construction.
Considerate Construction	2	1.14%		2					Contractor	
Monitoring of Construction-site impacts	2	1.14%			2				Contractor	
Exemplary Level Credit	1	1.00%		1					Contractor	
Man 04 - Commissioning and Handover										
Commissioning and Testing Schedule and Responsibilities	1	0.57%		1					Client/ Contractor	
Commissioning Building Services	1	0.57%	Stage 2 Stage 3	1					Client/ Contractor	Commissioning Manager appointed during design stage.
Testing and Inspecting Building Fabric	1	0.57%			1				Contractor	
Handover	1	0.57%			1				Client/ Occupier	Building User Guide developed and distributed.
Man 05 - Aftercare	**Credit Aim:** To provide post-handover aftercare to the building owner/occupants during the first year of occupation to ensure the building operates and adapts, where relevant, in accordance with the design intent and operational demands.									
Aftercare Support	1	0.57%		1					All Parties	To determine specific aftercare roles.
Seasonal Commissioning	1	0.57%			1				Contractor	Seasonal Comissioning activities to be completed within 12 months.
Post Occupancy Evaluation	1	0.57%			1				Client/ Occuper	Commitment to carry out Post-Occupancy Evaluation exercise one year after initial occupation.
Exemplary Level Criteria	1	1.00%			1					Specified Support activities at quaterly intervals for the first three years of building occupation.

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
HEALTH & WELLBEING										
Hea 01 - Visual comfort										
Glare Control	1	0.83%			1				Architect/MEP	Lighting modelling to reduce glare without increasing energy consumption
Daylighting	2	1.67%					2		Architect/MEP	
View Out	1	0.83%			1				Architect	95% of floor area within 7m of a wall with a window.
Internal and External Lighting Levels, Zoning and Control	1	0.83%			1				MEP	Internal Lighting is suitable for the required use of the building. External Lighting is designed to provide suitable light to enable users to perform outdoor tasks efficiently and accurately during the night.
Exemplary Level Criteria	1	1.00%					1		Architect	Exemplary standards for daylighting have been met.
Hea 02 - Indoor air quality										
Indoor Air Quality Plan	1	0.83%		1					Environmental Consultant	Indoor Air Quality Plan
Ventilation	1	0.83%				1			MEP	Building designed to minimise the concentration and recirculation of pollutants in the building.
Volatile Organic Compound (VOC) Emission Levels (products)	1	0.83%		1					Contractor	
Volatile Organic Compound (VOC) Emission Levels (Post Construction)	1	0.83%		1					Contractor	
Potential for Natural Ventilation (Not Applicable to Prisons)	1	0.83%					1		MEP/Architect	Occupied spaces are designed to be capable of providing fresh air entirley via natural ventilation, this strategy must have two levels of user-control.
Exemplary Level Criteria	2	2.00%				1	1		BH/ University Research	Previous credits achieved to exemplary level criteria.
Hea 03 - Safe Containment in Laboratories										
Laboratory containment devices and containment areas	1	0.83%	Stage 3						MEP	
Buildings with containment level 2 and 3 laboratory facilities	1	0.83%							MEP	

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
Hea 04 - Thermal Comfort										
Thermal Modelling	1	0.83%		1					Physics	Thermal Modelling completed to the level specified.
Adaptability - For a Projected Climate Change Scenario	1	0.83%					1		Structures	Modeling has taken into account climate change.
Thermal Zoning and Controls	1	0.83%		1					MEP	Modelling has formed the temperature control strategy which must address building zones.
Hea 05 - Acoustic performance	**Credit Aim:** To ensure the buildings' acoustic performance including sound insulation meet the appropriate standards for its purpose.									
Education, Healthcare, Office and Law Buildings	3	2.50%							BH/ Acoustician	Acoustic Report showing applied criteria.
Industrial, Retail, Prisons and "Other" Buildings	3	2.50%							BH/ Acoustician	Acoustic Report showing applied criteria.
Multi-Residential and Other, Residential Institutions Buildings	4	3.33%			3		1		BH/ Acoustician	Acoustic Report showing applied criteria.
Hea 06 - Safety and security										
Safe Access	1	0.83%					1		Architect / Transport	
Security of Site and Building	1	0.83%	Stage 2	1					BH/ Security Specialist	Security Needs Assessment.
ENERGY										
Ene 01 - Reduction of CO2 emissions										
Energy Performance	12	8.18%		0		3	9		Physics / Architect / MEP	
Exemplary Level Criteria							5		BH	
Zero Regulated Carbon/Carbon Negative	5	5.00%								
Ene 02 - Energy monitoring										
Sub-Metering of Major Energy Consuming Systems	1	0.68%		1					MEP	Sub Meters are able to account for over 90% of energy consumption.
Sub-Metering of High Energy Load and Tenancy Areas **Not applicable for Pre-schools, Primary Schools, Law**	1	0.68%					1		MEP/ Contractor	
Ene 03 - External lighting										
External Lighting Specification	1	0.68%		1					MEP	No External Light or suitably chosen external lighting and fittings.

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
Ene 04 - Low Carbon Design										
Passive Design Analysis	1	0.68%	Stage 2	1					Sustainability	
Free Cooling	1	0.68%					1		MEP/ Architect	
Low and Zero Carbon Feasibility Study	1	0.68%	Stage 2	1					Physics	LZC Technology Feasibility Study
Ene 05 - Energy efficient cold storage										
Refrigeration Energy Consumption	1	0.68%					2		MEP	If used, rfrigeration systems are compliant with the Code of Conduct for carbon reduction in the refrigeration retail sector.
Indirect Greenhouse Gas Emissions	1	0.68%		1					MEP	Saving in indirect greenhouse gas emissions over operational life.
Ene 06 - Energy efficient transportation systems										
Energy Consumption	1	0.68%		1					Lift Consultant/ MEP	
Energy Efficient Features	2	1.36%		2					Lift Consultant/ MEP	
Ene 07 - Energy efficient laboratory systems										
Pre-Requisite	Pre-requisite	N/A								
Design Specification	1	0.68%	Stage 1						Client/ Architect	Laboratory requirements are found from the client.
Best Practise Energy Efficiency Measures	4	2.73%							MEP	
Ene 08 - Energy efficient equipment										
Energy Efficient Equipment	2	1.36%			2				MEP/ Architect	Determine unregulated energy consuming loads and demonstrate a meaningful reduction.
Ene 09 Drying space										
Drying Space	1	0.68%							BH	

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
TRANSPORT										
Tra 01 - Public Transport Accessibility										
Public Transport Accessibility Index (AI)	5	0.82%		5					Architect / BREEAM Assessor	Use of BREEAM AI caluclator.
Dedicated Bus Service	1	0.82%							Architect/ Transport	
Tra 02 - Proximity to Amenities										
Proximity to Amenities	1	0.82%		1					Architect/ Transport	Analysis of local area & amenities.
Tra 03 - Cyclist Facilities										
Cycle Storage	1	0.82%			1				Architect/ Transport	
Cyclist Facilities	1	0.82%			1				Architect/ Transport	
Cycle Storage and Cyclist Facilities	1	0.82%							Architect/ Transport	
Tra 04 - Maximum Car Parking Capacity										
Car Parking Capacity	2	0.82%			2				Architect/ Transport	Car parking specifications dependant on AI
Tra 05 - Travel plan										
Transport plan based on site specific travel survey/assessment	1	0.82%			1				Architect/ Transport	Travel Plan developed with site specific travel assessment/ statement.

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
WATER										
Wat 01 - Water Consumption										
Water Consumption	5	3.89%		2		1	2		MEP/Architect	BREEAM Wat 01 Calculator
Exemplary Level Criteria	1	1.00%					1		BH/ BREEAM	Recycled water at exemplary level.
***Wat 02 - Water Monitoring**										
Water Monitoring	1	0.78%		1					MEP	Use of water meters on mains supply and any area consumping 10% or more of the total water demand.
Wat 03 - Water Leak Detection										
Leak Detection System	1	0.78%		1					MEP	
Flow Control Devices	1	0.78%		1					MEP	
Wat 04 - Water Efficient Equipment										
Water Efficient Equipment	1	0.78%			1				MEP/ Contractor	

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
MATERIALS										
Mat 01 - Life Cycle Impacts										
Calculated based on Green Guide rating of main building elements	6	5.79%		3			3		Architect / Contractor	Assesment of main building elements.
Exemplary Level Criteria	1	0.96%					1			
Using the Green Guide to Specification (Elemental Exemplary Level Criteria	2	2.00%					2			
Using Compliant Life Cycle Assessment Software Tools										
Mat 02 - Hard Landscaping and Boundary Protection										
Hard Landscaping and Boundary Protection	1	0.96%					1		Landscape Architect /	
Mat 03 - Responsible sourcing of materials										
Pre-Requisite	Pre-requisite	N/A		y					Principal Contractor	
Sustainable Procurement Plan	1	0.96%		1					Principal Contractor	Sustainable Producrement Plan
Responsible Sourcing of Materials (RSM)	3	2.89%		1			2		Principal Contractor	
Exemplary Level Criteria	1	1.00%					1		Principal Contractor	
Mat 04 - Insulation										
Embodied Impact	1	0.96%		1					Architect/ MEP	
Mat 05 - Designing for Durability and Resilience										
Protecting Vulnerable Parts of the Building From Damage	1	0.96%		1					Architect	
Mat 06- Material Efficiency										
Material Efficiency	1	0.96%	Stage 2 Stage 3			1			Architect / Sustainability	

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BREEAM Credits (Mandatory Credits shown red)	Available credits	% Score Value	RIBA Stage	Targeted credits - Low Risk	Targeted credits - Medium Risk	Potential credits	Not Targeted	Achieved Credits	Ownership	Comments
WASTE										
***Wst 01 - Construction Waste Management**										
Construction Resource Efficiency	**3**	**3.19%**		1			2		Contractor	RMP has been devloped construction waste.
Diversion of Resources from Landfill	**1**	**1.06%**		1					Contractor	
Exemplary Level Criteria		**N/A**							-	
Construction Resource Efficiency - Simple Buildings	**1**	**1.06%**							Contractor	
RMP Measurements and Reporting - Simple Buildings	**2**	**2.13%**							Contractor	
Exemplary Level Criteria - Simple Buildings		**N/A**							Contractor	
Wst 02 - Recycled Aggregates										
Recycled Aggregates	**1**	**1.06%**			1				Contractor	
Exemplary Level Criteria	**1**	**1.00%**					1		Contractor	
Wst 03 - Operational waste										
Operational Waste **Healthcare Buildings Only** **Multi-Residential Buildings With Self Contained Dwellings/ Bedsits Only** **Multi-Residential Buildings With Individual Bedrooms and Communal Facilities Only**	**1**	**1.06%**		1					BH/ Client / Occupier	Provision for waste due to the operation of the building.
Wst 04 - Speculative Floor and Ceiling Finishes										
Speculative Floor and Ceiling Finishes	**1**	**1.00%**							Client/ Occupier	
Wst 05 - Adaptation to Climate Change										
Adaptation to Climate Change - Structural and Fabric Resilience	**1**	**1.00%**	**Stage 2**			1			Structures	
Exemplary Credit - Responding to Adaptation to Climate Change	**1**	**1.00%**				1			Structures	
Wst 06 - Functional Adaptability										
Functional Adaptability	**1**	**1.00%**	**Stage 2 Stage 4**				1		Structures	

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LAND USE & ECOLOGY										
LE01 - Site Selection										
Previously Occupied Land	**1**	**1.00%**		1					Client/ Architect	Use of previously developed land.
Contaminated land	**1**	**1.00%**					1		BH	Unlikely - TBC
LE02 - Ecological Value of Site and Protection of Ecological Features										
Land of Low Ecological Value	**1**	**1.00%**					1		Ecologist / BH	Use of Ecologist report of BREEAM checklist.
Protection of existing ecological features	**1**	**1.00%**					1		Ecologist/ Prinicpal	
LE03 - Minimising Impact on Exisiting Site Ecology										
Change in Ecological Value 1	**2**	**2.00%**					1		Ecologist / BH	Ecology Report
Change in Ecological Value 2	**1**	**1.00%**					1		Ecologist / BH	Ecology Report
LE04 - Enhancing Site Ecology										
Ecologist's Report and Reccomendations **Except HM Prison-Sites**	1	**1.00%**	Stage 1 Stage 2	1					Architect/ Ecologist	Ecologist to be appointed
Ecologist's Report and Reccomendations **HM Prison-sites ONLY**	2	**2.00%**	Stage 1 Stage 2						Architect/ Ecologist	
Increase in Ecological Value **Except HM Prison-Sites**	**1**	**1.00%**					1		Architect/ Ecologist	
Simple Buildings Only	**1**	**1.00%**							Architect/ Ecologist	Local Ecological expertise has been consulted
LE05 - Long Term Impact on Biodiversity										
Long Term Impact on Biodiversity	**2**	**2.00%**					2		Ecologist/ Contractor	Five Year Landscape & Habitat Management Plan

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POLLUTION										
Pol 01 - Impact of Refrigerants										
No Refrigerant Use	3	2.31%							MEP	
Pre-Requisite	0	N/A		y					MEP	
Impact of Refrigerant	2	1.54%					2		MEP	
Leak Detection	1	0.77%					1		MEP	
Pol 02 - NOx Emissions	**Credit Aim:** To encourage the supply of heat and/or coolth from a system that minimises NOx emissions, and therefore reduces pollution of the local environment.									
NOx Emissions										
All buildina tvoes except industrial	3	2.31%		3					MEP	
NOx Emissions	2	1.54%							MEP	
Insutrial buildings ONLY										
Pol 03 - Surface Water Run Off										
Flood Resilience	2	1.54%		2					Civil Engineer	Flood Risk Assessment
Surface Water Run Off - Pre-Requisite	0	N/A		y					Civil Engineer	
Surface Water Run Off - Credit 1	1	0.77%		1					Civil Engineer	
Surface Water Run Off - Credit 2	1	0.77%				1			Civil Engineer	
Minimising Watercourse Pollution	1	0.77%					1		Civil Engineer	
Surface Water Run-Off	2	1.54%							Civil Engineer	
Simple Buildinas ONLY										
Surface Water Run-Off	1	0.77%							Civil Engineer	
Simple Buildinas ONLY										
Pol 04 - Reduction of Night Time Light Pollution										
Reduction of Night Time Light Pollution	1	0.77%					1		MEP	
Pol 05 -Reduction of Noise Pollution										
Reduction of Noise Pollution	1	0.77%			1				Acoustician	Noise Impact Assessment
INNOVATION										
Inn 01 - Innovation[1]										
Standard Innovation credits (Max. 10)	10	10.00%		1	1	2	10	0		
Approved Innovations	0	0.00%		0	0	0	0	0		Opportunities to link in with research to be discussed with the University.

[1] Note: a maximum of 10 credits can be awarded from the available innovation credits

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